

REMARKS

The Office examined claims 1, 3-11, 13-19 and rejected same. With this paper, none of the claims are canceled, none are amended, and none are added.

Claim Rejections under 35 USC §102/103

Claims 1, 3-6 and 11 are rejected under 35 USC §102(b) as being anticipated by or, in the alternative, under 35 USC §103(a) as obvious over Nishiguchi *et al.* (JP 09-324096, Nishiguchi hereinafter).

The present invention relates to a polyvinyl alcohol (PVA) film which dissolves in water at 20°C within 10 minutes and has an α/β ratio of not more than 10, wherein α is a storage modulus of the film at 20°C in a dry atmosphere and β is a storage modulus of the film at 20°C and 80% RH (relative humidity). The film is further characterized in that the film has a glass transition temperature (T_g) of not more than 20°C.

Nishiguchi discloses a water-soluble film comprising (1) a modified polyvinyl alcohol (PVA) resin containing anionic groups, and (2) a PVA resin having hydrolysis degree of 70-99% by mol. As acknowledged by the Office, Nishiguchi does not disclose or suggest a ratio of storage modulus (α/β) and a glass transition temperature (T_g) of the film.

In rejecting claim 1, the Office states that: "However, in view of the substantially identical polyvinyl alcohol composition between Nishiguchi and instant claim 1, it is the examiner['s] position that Nishiguchi's polyvinyl alcohol composition inherently possesses these properties." The Applicant respectfully disagrees with this assertion.

Some materials have a glass transition temperature T_g below which the molecules in the materials have little relative mobility. For thermoplastic (non-crosslinked) polymers, they become rigid and brittle below the T_g , and thus

they crack and shatter easily under stress. Above the T_g , the secondary, non-covalent bonds between the polymer chains become weak in comparison to thermal motion, and the polymer becomes rubbery and capable of elastic or plastic deformation without fracture.

The Applicant believes that the PVA film of Nishiguchi is different from the film of the present invention, because there are evidences that the T_g of the film in Nishiguchi is not lower than 20°C, which is out of the range in claim 1. This conclusion is based on the following observations:

(1) The elongation values of the film samples in Nishiguchi are lower than that of the instant application.

As presented in a Declaration under 37 CFR 1.132 filed with a response to the previous Office Action on July 7, 2006, the film Examples 1 to 3 described in the instant specification (pages 17-20) have elongation values (measured by percentage of elongation at break, EB %) of 220%, 210% and 330%, respectively. These samples also have T_g s of 6°C, 8°C and 8°C, respectively (see the following Table 1).

Table 1

	Example 1	Example 2	Example 3
Glass transition temperature (°C)	6	8	8
Elongation (EB) (%) at 20°C	220	210	330

Because the film of the present invention has a T_g of not more than 20°C, the samples were above the glass transition temperature when the elongation measurement was performed. Therefore, these samples can withstand large amount of elastic or plastic deformation without fracture. This is evidenced by the large elongation values (at least 210%) in Table 1.

As a comparison, the elongation values of the film samples in Nishiguchi are shown in the following Table 2 (these values are listed in the fifth column of Table 2 of Nishiguchi).

Table 2

	Ex. 1	Ex. 2	Ex. 3	Ex. 4	Ex. 5	Ex. 6
Elongation (EB %) at 20°C	100	100	100	95	140	120

As shown above, the elongation values of the Examples 1 to 6 of Nishiguchi are approximately 100%, only half of the values of the samples in the present application. This means the film samples of Nishiguchi are more rigid and brittle, and more susceptible to fractures caused by elastic or plastic deformation. Therefore, it is apparent that the T_g s of these samples must be higher than the temperature under which the elongation is measured (20°C).

(2) The hygroscopic property of the film samples of Nishiguchi also indicates that the T_g is not lower than 20°C.

Nishiguchi states that: "Weight change of a film was measured under 25°C and RH80% of condition for hygroscopicity. Criteria in moisture absorption: <20% - small, 20-30% - medium, and >30% - large (Paragraph [0044], rearranged with reference to original publication in Japanese)." As shown in Table 2 of Nishiguchi, the hygroscopic property (吸湿性) of all the film samples are "small (小)" (<20%) (10th column of Table 2).

Generally, when the ambient temperature is higher than the T_g of a PVA film, the PVA film enters an elastomeric state and thereby, absorbs more moisture. Meanwhile, when the ambient temperature is lower than the T_g of the film, the film absorbs less moisture. The moisture absorption of all the film samples of Nishiguchi are small, that means these films were in a glassy state under the temperature the hygroscopic property was measured (25°C). Therefore, it is apparent that the T_g of the film samples of Nishiguchi must be not lower than 25°C.

In conclusion, the present invention differs from Nishiguchi at least in that the glass transition temperature of the film of the present invention is

different from that of Nishiguchi. Accordingly, the PVA film of the present invention DOES NOT have a substantially identical polyvinyl alcohol composition as Nishiguchi.

The PVA film of the present invention has excellent cold water solubility and durability such that change in appearance of the film under high humidity is slight. In fact, because of the low glass transition temperature, the cold water solubility of the film is only slightly decreased, even if unit-dose packages made therefrom are stored for a long term. Also, because of the low glass transition temperature, the film has excellent flexibility in ambient temperature and is very useful in packaging of liquid chemicals.

Based on the above, it is believed that claim 1 is patentable in view of the cited reference Nishiguchi. Applicant respectfully requests the rejection be reconsidered and withdrawn.

Claims 3-6 and 8-19 depend directly or indirectly from claim 1. Since claim 1 is believed to be patentable, these claims are believed to be patentable due to their dependency. Applicant respectfully requests the rejections of these claims be reconsidered and withdrawn.

Claim Rejections under 35 USC §103

Claim 7 is rejected under 35 USC §103(a) as being unpatentable over Nishiguchi *et al* (JP 09-324096) in view of Nishiguchi *et al* (JP 10-060207).

Claim 7 depends from claim 3, which, in turn, depends from claim 1. Since claim 1 is believed to be patentable, claim 7 is patentable as well. Applicant respectfully requests the rejection of claim 7 be reconsidered and withdrawn.

Request for Reconsideration of the Finality of the Rejections

The Applicant respectfully disputes the finality of the rejections in the present Office Action. In the previous non-final Office Action, claims 1-6 and 8-19 were rejected based on reference JP-A-43-1487. In the response to the non-final Office Action, the Applicant made amendment only to combine claims 1 and 2. Therefore, the current claim 1 is in fact the previous, now canceled, claim 2. In the present Office Action, the amended claim 1 is rejected based on a new reference JP 09-324096 and the previous argument regarding the rejection based on JP-A-43-1487 was moot in view of new ground(s) of rejection (page 2 of the Office Action). Since the same claim (claim 2) was rejected twice based on two different references, the finality of the rejection is believed to be premature (MPEP 706.07). Withdrawal of finality of the rejection is respectfully requested.

The undersigned Applicants' agent respectfully requests an interview with the Examiner to discuss the finality of the rejection before a further Office Action is issued on this application.

Conclusion

For all the foregoing reasons, it is believed that all the claims of the instant application are patentable, and their passage to issue is earnestly solicited. Applicant's agent urges the Examiner to call to discuss the present response if anything in the present response is unclear or unpersuasive.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Shiming Wu', with a long horizontal stroke extending to the right.

Shiming Wu

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